WHAT IS CLAIMED IS:

1. A rotary metal-cutting tool comprising, in combination, a tool body and a cutting portion attached to the tool body;

the tool body including: a shank portion defining a longitudinal center axis, a front surface, and rear chip flutes formed in an external side surface of the shank for guiding chips rearwardly during a cutting operation;

the cutting portion including: a rear support surface abutting the front surface, a front cutting surface, and front chip flutes formed in a side surface of the cutting portion and intersecting the cutting face to form cutting edges therewith;

the tool body and cutting portion being interconnected by a dovetail-shaped bayonet coupling formed by projections disposed on one of the tool body and cutting portion, and recesses formed in the other of the tool body and cutting portion, the projections being circumferentially offset with respect to the flutes and extending generally longitudinally; the recesses extending circumferentially from respective flutes; the flutes sized to longitudinally receive respective projections during longitudinal insertion or removal of the cutting portion relative to the tool body; the cutting portion being rotatable about the center axis relative to the tool body to transfer the projections from the respective flutes into the recesses while bringing the front and rear flutes into mutual alignment.

2. The tool according to claim 1 wherein the recesses are formed in the cutting portion; and the projections are formed in the tool body.

3. The tool according to claim 1 wherein the recesses are formed in the outer surface of the cutting portion; the cutting portion being rotatable relative to the tool body by an angle less than 360 degrees.

4. The tool according to claim 3 wherein the angle is less than 60 degrees.

5. The tool according to claim 1 wherein each of the projections includes a first surface inclined obliquely relative to the center axis, the first surface facing generally radially inwardly and longitudinally rearwardly; each of the recesses including a second surface inclined obliquely relative to the center axis, the second surface facing generally radially outwardly and longitudinally forwardly and opposing a respective first surface to prevent relative longitudinal movement of the cutting portion relative to the tool body.

6. The tool according to claim 5 wherein a material from which the tool body is formed has a lower Young's modulus than a material from which the cutting portion is formed, to enable the projections to bend elastically in a radial direction during relative rotation between the cutting portion and tool body.

7. The tool according to claim 1 wherein each of the projections includes a first surface inclined obliquely relative to the center axis, the first surface facing generally radially inwardly and longitudinally rearwardly; each of the recesses including a second surface inclined obliquely relative to the center axis, the second surface facing generally radially outwardly and longitudinally forwardly and opposing a respective first surface to prevent relative longitudinal movement of the cutting portion relative to the tool body.

8. The tool according to claim 6 wherein the outer surface of the cutting portion defines a pair of lands extending circumferentially by equal distances between the front flutes, each of the recesses extending circumferentially for a distance of about one-half of the circumferential distance of a respective land, each of the projections extending circumferentially a distance substantially equal to that of a respective recess.

9. The tool according to claim 1 wherein each of the projections includes a first surface inclined obliquely relative to the center axis, the first surface facing generally radially inwardly and longitudinally rearwardly; each of the recesses including a second surface inclined obliquely relative to the center axis, the second surface facing generally radially outwardly and longitudinally forwardly and opposing a respective first surface to prevent relative longitudinal movement of the cutting portion relative to the tool body.

10. The tool according to claim 1 wherein each of the projections includes a forwardly facing end surface, and the recess includes a forwardly facing end surface, and the recess includes a rearwardly facing end surface spaced from the forwardly facing end surface by a gap.

11. A cutting portion adapted to be connected to a tool body for rotary metal cutting, comprising a front cutting surface having at least one cutting edge, a rear support surface, and at least one chip flute formed in a side surface of the cutting portion for guiding cuttings, said cutting portion including coupling means defining a part of a bayonet coupling adapted to connect a tool body with the cutting portion.

12. The cutting portion according to claim 11 wherein the coupling means comprises a recess extending circumferentially less than 60 degrees.

13. A tool body adapted to support a cutting portion for metal cutting, the tool body including a shank, flutes formed in an outer periphery of the tool body for guiding chips, a front surface, and coupling means defining a female portion ... dovetail-shaped part of a bayonet coupling adapted to connect a cutting portion to the tool body.

14. The tool body according to claim 13 wherein the coupling means comprises projections spaced diametrically from one another.

15. A method for mounting a cutting portion to a tool body to form a metal-cutting rotary tool; the tool body including a shank portion; a front surface, and rear chip flutes formed in an outer surface of the tool body; the cutting portion including a support surface abutting the front surface, a cutting surface having cutting edges, and front chip flutes formed in an outer surface of the cutting portion; one of the tool body and cutting portion including longitudinal projections, and the other of the tool body and cutting portion including circumferential recesses, each recess communicating with a respective flute and extending less than 180 degrees; the method comprising the steps of:

A) converging the cutting portion and tool body longitudinally toward one another to bring the projections into respective ones of the flutes that communicate with the circumferential recesses; and

B) effecting relative rotation between the tool body and cutting portion to cause the projections to enter respective ones of the recesses to bring the front flutes into alignment with the rear flutes, and to bring a stop surface of each projection into longitudinally opposing relationship with a stop surface of a respective recess for defining a dovetail-shaped bayonet connection preventing longitudinal displacement of the cutting portion relative to the tool body.

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